



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/591,070

08/30/2006

Noriyoshi Tsuyuzaki

OKB-017

5909

20374 7590 01/18/2011
KUBOVCIK & KUBOVCIK
SUITE 1105
1215 SOUTH CLARK STREET
ARLINGTON, VA 22202

EXAMINER

YANG, JAMES J

ART UNIT

PAPER NUMBER

2612

MAIL DATE

DELIVERY MODE

01/18/2011

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/591,070	Applicant(s) TSUYUZAKI, NORIYOSHI	
	Examiner JAMES YANG	Art Unit 2612	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11/30/2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4,6,8-11,13 and 15-19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4,6,8-11,13 and 15-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is in response to applicant's amendment filed 11/30/2010. Claims 1-4, 6, 8-11, 13, and 15-19 are currently pending in this application.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

1. Claims 1-4, 8-11, and 15-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shi (EP 0957220) in view of Shilton (WO 99/41834).

Claim 1, Shi teaches:

An authentication apparatus comprising
a body, and a partner side paired with the body (*Shi*, Paragraph [0008], The lock body is a *body*, and the key-body is a *partner side*.), the apparatus comprising:
a random pulse generator, arranged in the body or the partner side, or in both the body and the partner side (*Shi*, Paragraph [0008], The random code generator IC3 is a *random pulse generator*, and is arranged in the body.), **which generates random pulses** (*Shi*, Paragraph [0009], The random pulse generation is disclosed in Fig. 3 and Paragraph [0017].);

a means which outputs authentication data based on a combination of a pulse voltage (Shi, Paragraph [0017], A true random code is partially created from a voltage-controlled oscillator to obtain a spectrum-spread signal.) **and a pulse interval of the random pulses generated by the random pulse generator** (Shi, Paragraph [0013], The microprocessor IC1 outputs the new codes from the code generator and stores them in memory units. The random numbers generated are determined by a sequence of pulses with random widths, thus a pulse interval (see Shi, Paragraph [0015]). The random pulses use the pulse voltage and the pulse interval to generate the random pulses.);

a means which stores authentication data (Shi, Paragraph [0006]),

a communication means which transmits/receives authentication data (Shi, Paragraph [0008]); and

a control means which controls the communication of authentication data and collates authentication data (Shi, Paragraph [0009], Microprocessor IC1 is the *control means*, and the comparison between the codes stored in the lock-body and the key-body is the *collation of the authentication data*.).

Shi does not teach:

The random pulse generator detects α particles, a beta ray or a gamma ray released by the collapse of an atomic nucleus and generates the random pulses.

Shilton teaches:

The random pulse generator detects the α particles, the beta ray or the gamma ray released by the collapse of the atomic nucleus (*Shilton*, Page 5, Lines 18-20, The radiation is detected by a PIN diode (see *Shilton*, Page 5, Lines 30-31) or directly onto a silicon chip (see *Shilton*, Page 6, Lines 1-2). The radioactive decay is the *collapse of the atomic nucleus*.) **and generates random pulses** (*Shilton*, Page 4, Lines 13-15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the random code generator in Shi by integrating the low radiation source and detector for generating random events as taught by *Shilton*.

The motivation would be to produce random codes that are difficult to duplicate to prevent fraud or corruption of random pulse generators (see *Shilton*, Page 1, Lines 9-18).

Claim 2, Shi in view of Shilton further teaches:

The control means receives authentication data stored in the storage means arranged on the partner side, collates the received authentication data with authentication data of the storage means arranged in the body (*Shi*, Paragraph [0009], Microprocessor IC1 is the *control means*, and the comparison between the codes stored in the lock-body and the key-body is the *collation of the authentication data*.), **and in accordance with the result of collation, authenticates the partner side** (*Shi*, Paragraph [0009]), **and in that upon completion of the**

Art Unit: 2612

authentication, authentication data is updated, and new authentication data thus updated is written in the storage means of the body and the partner side (Shi, Paragraph [0009]).

Claim 3, *Shi in view of Shilton further teaches:*

A drive unit control means which controls a drive unit in accordance with the result of collation by the control means (*Shi*, Paragraph [0009], The driving mechanism, represented by an output drive IC5, is a *drive unit control means*, which controls the lock of a lock-body, which is a *drive unit*.).

Claim 4, *Shi in view of Shilton further teaches:*

The body is the body of an electronic lock, and the partner side is a key (*Shi*, Paragraph [0008], The lock-body comprises a microprocessor, memory, random code generator, driver, and alarm unit, thus it is an electronic lock.).

Claim 8, *Shi in view of Shilton further teaches:*

The communication means transmits/receives the authentication data by circuit connection due to contact or by infrared light communication or radio communication (*Shi*, Paragraph [0008]).

Claim 9, Shi teaches:

An authentication method comprising the steps of:

generating random pulses by a random pulse generator (*Shi*, Paragraph [0009], The random pulse generation is disclosed in Fig. 3 and Paragraph [0017].)
arranged in a body or a partner side paired with the body, or in both the body and the partner side (*Shi*, Paragraph [0008], The random code generator IC3 is a *random pulse generator*, and is arranged in the body.);

outputting authentication data based on a combination of a pulse voltage (*Shi*, Paragraph [0017], A true random code is partially created from a voltage-controlled oscillator to obtain a spectrum-spreaded signal.) **and a pulse interval of the random pulses generated by the random pulse generator** (*Shi*, Paragraph [0013], The microprocessor IC1 outputs the new codes from the code generator and stores them in memory units. The random numbers generated are determined by a sequence of pulses with random widths, thus a pulse interval (see *Shi*, Paragraph [0015]). The random pulses use the pulse voltage and the pulse interval to generate the random pulses.);

storing authentication data (*Shi*, Paragraph [0006]);
transmitting/receiving authentication data (*Shi*, Paragraph [0008]); **and**
controlling the communication of authentication data and collating authentication data (*Shi*, Paragraph [0009], Microprocessor IC1 is the *control means*, and the comparison between the codes stored in the lock-body and the key-body is the *collation of the authentication data*.).

Shi does not teach:

The random pulse generator detects the α particles, the beta ray or a gamma ray released by the collapse of an atomic nucleus and generates random pulses.

Shilton teaches:

The random pulse generator detects the α particles, the beta ray or the gamma ray released by the collapse of the atomic nucleus (*Shilton*, Page 5, Lines 18-20, The radiation is detected by a PIN diode (see *Shilton*, Page 5, Lines 30-31) or directly onto a silicon chip (see *Shilton*, Page 6, Lines 1-2).) **and generates random pulses** (*Shilton*, Page 4, Lines 13-15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the random code generator in Shi by integrating the low radiation source and detector for generating random events as taught by Shilton.

The motivation would be to produce random codes that are difficult to duplicate to prevent fraud or corruption of random pulse generators (see *Shilton*, Page 1, Lines 9-18).

Claim 10, Shi in view of Shilton further teaches:

The control step receives the authentication data stored in a storage means arranged on the partner side, collates the received authentication data with authentication data of a storage means arranged in the body (*Shi*, Paragraph

Art Unit: 2612

[0009], Microprocessor IC1 is the *control means*, and the comparison between the codes stored in the lock-body and the key-body is the *collation of the authentication data*.), **authenticates the partner side in accordance with the result of collation** (*Shi*, Paragraph [0009]), **and after completion of authentication, updates authentication data, and writes new authentication data thus updated in the storage means of the body and the partner side** (*Shi*, Paragraph [0009]).

Claim 11, Shi in view of Shilton further teaches:

A drive unit control step for controlling a drive unit in accordance with the result of collation in the control step (*Shi*, Paragraph [0009], The driving mechanism, represented by an output drive IC5, is a *drive unit control means*, which controls the lock of a lock-body, which is a *drive unit*.).

Claim 15, Shi in view of Shilton further teaches:

The communication step transmits and receives the authentication data by circuit connection due to contact or by infrared light communication or radio communication (*Shi*, Paragraph [0008]).

Claim 16, Shi in view of Shilton further teaches:

The body or the partner side includes the hardware of a computer (*Shi*, Paragraph [0012], The microprocessor IC1 and the non-volatile memory unit IC2 are *hardware of a computer*, and the body includes the hardware.), **and the partner side or**

Art Unit: 2612

the body including the random pulse generator is mounted integrally with or independently of the hardware of the computer (*Shi*, Paragraph [0012], As further disclosed in Fig. 1, the true random generator IC3 is mounted integrally with the hardware of the computer components IC1 and IC2 within the lock-body.).

Claim 17, Shi in view of Shilton further teaches:

The body or the partner side includes the hardware of a computer (*Shi*, Paragraph [0012], The microprocessor IC1 and the non-volatile memory unit IC2 are *hardware of a computer*, and the body includes the hardware.), **and the partner side or the body including the random pulse generator is mounted integrally with or independently of the hardware of the computer** (*Shi*, Paragraph [0012], As further disclosed in Fig. 1, the true random generator IC3 is mounted integrally with the hardware of the computer components IC1 and IC2 within the lock-body.).

Claim 18, Shi teaches:

A computer readable memory medium storing an authentication program, said authentication program (*Shi*, Paragraph [0006], Shi discloses in Fig. 2 a flow chart showing the operation of the cryptogram lock system performed by the microprocessor IC1, non-volatile memory unit of the lock-body and key-body, random code generator IC3, output driver IC5, and alarm unit IC6, which is automatically performed. It is inherent of a system that automatically performs the steps disclosed in

Fig. 2 and Paragraph [0020] that the steps, as a whole, are programmed into the microprocessor IC1 of the lock-body.) **comprising:**

a code to generate random pulses from a random pulse generator (*Shi*, Paragraph [0009], The random pulse generation is disclosed in Fig. 3 and Paragraph [0017].) **arranged in a body or a partner side paired with the body, or in both the body and the partner side partner side** (*Shi*, Paragraph [0009], The random pulse generation is disclosed in Fig. 3 and Paragraph [0017].);

a code to output authentication data based on a combination of a pulse voltage (*Shi*, Paragraph [0017], A true random code is partially created from a voltage-controlled oscillator to obtain a spectrum-spreaded signal.) **and a pulse interval of the random pulses generated by the random pulse generator** (*Shi*, Paragraph [0013], The microprocessor IC1 outputs the new codes from the code generator and stores them in memory units. The random numbers generated are determined by a sequence of pulses with random widths, thus a pulse interval (see *Shi*, Paragraph [0015]). The random pulses use the pulse voltage and the pulse interval to generate the random pulses.);

a code to store authentication data (*Shi*, Paragraph [0006]);

a code to transmit/receive authentication data (*Shi*, Paragraph [0008]); **and**

a code to control the communication of authentication data and collate authentication data (*Shi*, Paragraph [0009], Microprocessor IC1 is the *control means*, and the comparison between the codes stored in the lock-body and the key-body is the *collation of the authentication data*.).

Shi does not teach:

The random pulse generator detects α particles, a beta ray or a gamma ray released by the collapse of an atomic nucleus and generates the random pulses.

Shilton teaches:

The random pulse generator detects the α particles, the beta ray or the gamma ray released by the collapse of the atomic nucleus (*Shilton*, Page 5, Lines 18-20, The radiation is detected by a PIN diode (see *Shilton*, Page 5, Lines 30-31) or directly onto a silicon chip (see *Shilton*, Page 6, Lines 1-2). The radioactive decay is the *collapse of the atomic nucleus.*) **and generates random pulses** (*Shilton*, Page 4, Lines 13-15).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the random code generator in Shi by integrating the low radiation source and detector for generating random events as taught by Shilton.

The motivation would be to produce random codes that are difficult to duplicate to prevent fraud or corruption of random pulse generators (see *Shilton*, Page 1, Lines 9-18).

Claim 19, Shi in view of Shilton further teaches:

The code to control the communication of authentication data and collate authentication data includes: a code to receive authentication data stored in a storage means arranged on the partner side (*Shi*, Paragraph [0009], The memory of the IC4 of the key-body is the *storage means arranged on the partner side.*); **a code to collate the received authentication data with authentication data of a storage means arranged in the body** (*Shi*, Paragraph [0009], Microprocessor IC1 is the *control means*, and the comparison between the codes stored in the lock-body and the key-body is the *collation of the authentication data.*); **a code to authenticate the partner side in accordance with the result of collation** (*Shi*, Paragraph [0009]); **a code to update authentication data after completion of the authentication** (*Shi*, Paragraph [0009]); **and a code to write new authentication data thus updated in the storage means of the body and the partner side** (*Shi*, Paragraph [0009]).

2. Claims 6 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Shi* (EP 0957220) in view of *Shilton* (WO 99/41834), and further in view of *Barker* (U.S. 5,076,971).

Claims 6 and 13, Shi in view of Shilton teach:

An α particle radiator includes ^{241}Am , ^{210}Pb - ^{210}Po , ^{210}Po , and/or ^{244}Cm
(*Shilton*, Page 5, Lines 21-25).

Shi in view of Shilton teach:

A beta ray radiator includes ^{210}Pb .

Barker teaches:

A beta ray radiator includes ^{210}Pb (Barker, Col. 9, Lines 9-11).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the radiation source in Shi in view of Shilton with a ^{210}Pb beta emitter as taught by Barker.

The motivation would be to provide a stable beta radiation source with a long half-life (see Barker, Col. 2, Lines 6-16) applicable as a low activity radiation source in a Random Pulse Generator (see Shilton, Page 5, Lines 18-30).

Response to Arguments

Applicant's arguments filed 11/30/2010 have been fully considered but they are not persuasive.

In response to applicant's argument on Pages 10-11 that the Shi reference fails to teach using a combination of pulse voltage and pulse intervals to generate a random pulse, the examiner respectfully disagrees. In Paragraph [0017], although the output of A is converted by a D/A converter, the output of A is still used in order to achieve the output of B, and therefore a pulse voltage is used. Since the output of B is used to obtain a spectrum-spread signal, a sequence of pulses with random widths is generated, i.e. pulse intervals. Since the sequence of pulses originated from oscillator

Art Unit: 2612

A, the combination of the pulse voltage and the pulse interval are used to generate random pulses.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., "pulse width") are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). In other words, the examiner believes the term "pulse width", taken in light of the specification, may be interpreted as the pulses with random widths in Shi (see Shi, Paragraph [0015]). These random widths are taken to be the spectrum-spread signal in Paragraph [0017] which is a result of the voltage-controlled oscillator using voltage values to generate the random width pulses. The applicant further presents differences between the present invention and the Shi and Shilton references on Pages 12-14, however, the examiner believes the claims, as written, fail to fully differentiate the invention from the prior art of record. This is especially apparent in that the applicant explains that true random values may only be obtained using the collapse of an atomic nucleus, but the relationship between how the pulse voltage and intervals are used in

Art Unit: 2612

combination with the collapse of an atomic nucleus is not presented in the independent claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMES YANG whose telephone number is 571-270-5170. The examiner can normally be reached on M-F 8:30-5 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Zimmerman can be reached on 571-272-3059. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2612

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J.Y./

/Brian A Zimmerman/
Supervisory Patent Examiner, Art Unit 2612